

**Differentiate logarithmic functions****1**Find the derivative $f'(x)$.

if $f(x) = a \ln(x)$, $f'(x) = \frac{a}{x}$

[12pt] $f(x) = 3 \ln(x)$

A

$$f'(x) = \frac{1}{x}$$

B

$$f'(x) = 3x$$

C

$$f'(x) = \frac{3}{x}$$

D

$$f'(x) = \frac{3}{x^2}$$

2Find the derivative $f'(x)$.

if $f(x) = a \log_b(x)$, $f'(x) = \frac{a}{x \ln(b)}$

[12pt] $f(x) = 4 \log_5(x)$

A

$$f'(x) = \frac{4 \ln(5)}{x}$$

B

$$f'(x) = \frac{4}{x \ln(5)}$$

C

$$f'(x) = \frac{4}{x \ln(x)}$$

D

$$f'(x) = \frac{4}{x}$$

3Find the derivative $f'(x)$.

$$f(x) = -4 \ln(x)$$

A

$$f'(x) = -4x$$

B

$$f'(x) = -\frac{4}{x^2}$$

C

$$f'(x) = -\frac{4}{x}$$

D

$$f'(x) = \frac{1}{x}$$

4Find the derivative $f'(x)$.

$$f(x) = -6 \log_8(x)$$

A

$$f'(x) = -\frac{6}{x}$$

B

$$f'(x) = -\frac{6}{x \ln(x)}$$

C

$$f'(x) = -\frac{6}{x \ln(8)}$$

D

$$f'(x) = -\frac{6 \ln(8)}{x}$$

5Find the derivative $f'(x)$.

$$f(x) = 8 \log_7(x)$$

A

$$f'(x) = \frac{8}{x}$$

B

$$f'(x) = \frac{8 \ln(7)}{x}$$

C

$$f'(x) = \frac{8}{x \ln(x)}$$

D

$$f'(x) = \frac{8}{x \ln(7)}$$

**Differentiate logarithmic functions****6**Find the derivative $f'(x)$.

$$f(x) = 5 \ln(x)$$

A

$$f'(x) = \frac{5}{x}$$

B

$$f'(x) = \frac{1}{x}$$

C

$$f'(x) = \frac{5}{x^2}$$

D

$$f'(x) = 5x$$

7Find the derivative $f'(x)$.

$$f(x) = 7 \ln(x)$$

A

$$f'(x) = 7x$$

B

$$f'(x) = \frac{7}{x}$$

C

$$f'(x) = \frac{7}{x^2}$$

D

$$f'(x) = \frac{1}{x}$$

8Find the derivative $f'(x)$.

$$f(x) = -9 \log_3(x)$$

A

$$f'(x) = -\frac{9 \ln(3)}{x}$$

B

$$f'(x) = -\frac{9}{x \ln(x)}$$

C

$$f'(x) = -\frac{9}{x \ln(3)}$$

D

$$f'(x) = -\frac{9}{x}$$

10Find the derivative $f'(x)$.

$$f(x) = -5 \log_6(x)$$

A

$$f'(x) = -\frac{5}{x \ln(6)}$$

B

$$f'(x) = -\frac{5}{x \ln(x)}$$

C

$$f'(x) = -\frac{5 \ln(6)}{x}$$

D

$$f'(x) = -\frac{5}{x}$$

9Find the derivative $f'(x)$.

$$f(x) = -3 \ln(x)$$

A

$$f'(x) = -\frac{3}{x}$$

B

$$f'(x) = \frac{1}{x}$$

C

$$f'(x) = -\frac{3}{x^2}$$

D

$$f'(x) = -3x$$